Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (original): A signal amplitude controlling method for use in a system having an overall gain expressible as the product of a coarse analog gain and a fine digital gain, the method comprising the steps of:

monitoring an input video signal for determining a desired overall gain value;

determining an unfiltered fine gain control value using a first-order filter coefficient of unity and a first coarse gain control value;

monitoring the unfiltered fine gain control value for underflow and overflow outside of a desired range;

in the event no underflow or overflow occurs, using the first coarse gain control value as a second coarse gain control value, and a filter coefficient of less than one to determine a second fine gain control value;

in the event underflow or overflow occurs, using the unfiltered fine gain control value and the first coarse gain control value to determine a second coarse gain control value;

using the second coarse gain control value, determining a second fine gain control value;

applying the second coarse gain control value and the second fine gain control value to the input video signal to produce an output video signal within a pre-selected output amplitude range.

Claim 2 (original): A signal amplitude controlling method according to claim 1 wherein the second overall gain value comprises the product of the second coarse gain value and the second fine gain control value.

Claim 3 (original): A signal amplitude controlling method according to claim 1 wherein the calculation interval is greater than the line rate of the input signal.

Claim 4 (original): A signal amplitude controlling method according to claim 1 wherein the calculation interval is equal to the frame rate of the input signal.

Claim 5 (original): A signal amplitude controlling method according to claim 1 wherein the calculation interval is greater than the frame rate of the input signal.

Claim 6 (original): A signal amplitude controlling method according to claim 1 wherein the step of determining an unfiltered fine gain control value G_F further comprises steps of:

using a first-order filter coefficient value β of unity, determining an unfiltered fine gain control value G_F according to the relationship;

$G_F = G_F[n-1] + \beta * (a/b + G_F[n-1]) * [N_{NOM} / (N_{BP} - N_{ST}) - 1]$, (Equation 4);

wherein N_{BP} is the mean back-porch level and N_{ST} is the mean sync-tip level for the current video frame;

wherein N_{NOM} is the desired sync height;

wherein *a* is the y-intercept and *b* is the slope of the linear fine gain control equation;

for the condition $G_F < G_{MIN}$, selecting a new coarse gain control value $G_C[n]$, such that a new fine gain control value $G_F[n]$ is maintained between G_{MIN} and G_{MAX};

for the condition $G_F > G_{MAX}$ selecting a new coarse gain control value N_{CG}, such that a new fine gain control value $G_F[n]$ is maintained between G_{MIN} and G_{MAX};

wherein G_{MIN} is a pre-selected minimum fine gain control value, and G_{MAX} is a pre-selected maximum fine gain control value.

Claim 7 (original): A signal amplitude controlling method according to claim 1 wherein the step of determining a second coarse gain control value $G_C[n]$ further comprises steps of:

using an unfiltered fine gain control value G_F, and using a first coarse gain control value $G_C[n-1]$, determining a second coarse gain control value $G_C[n]$ according to the relationship,

$$G_C[n] = (a'/b' + G_C[n-1])^* (a/b + G_F) * 0.5^* [(a/b + G_{MIN})^{-1} + (a/b + G_{MAX} + 1)^{-1}] - a'/b' + 0.5 \quad \text{(Equation 5);}$$

wherein G_{MIN} is a pre-selected minimum fine gain control value, and G_{MAX} is a pre-selected maximum fine gain control value, and

wherein *a'* is the y-intercept and *b'* is the slope of the linear coarse gain control equation, and *a* is the y-intercept and *b* is the slope of the linear fine gain control equation.

Claim 8 (original): The method according to claim 1 further comprising the steps of representing the first fine gain control value $G_F[n]$ and the second fine gain control value $G_F[n]$ as a 12-bit digital value and representing the first coarse gain control value $G_C[n-1]$ and the second coarse gain control value $G_C[n]$ as 4-bit digital values.

Claim 9 (original): A signal amplitude controlling method according to claim 1 further comprising the step of:

using a first coarse gain control value $G_C[n-1]$, and using a second coarse gain control value $G_C[n]$, modeling a fine gain control value $G_F[n]$ using the relationship,

$$G_F[n] = -a/b + (a/b + G_F) * [(a'/b' + G_C[n-1]) / (a'/b' + G_C[n])] \quad \text{(Equation 7);}$$

wherein *a'* is the y-intercept and *b'* is the slope of the linear coarse gain control equation, and *a* is the y-intercept and *b* is the slope of the linear fine gain control equation.

Claim 10 (original): A method for automatic gain control in a video signal processing system wherein an overall gain may be expressed as the product of a coarse analog gain and a fine digital gain, the method comprising the steps of:

monitoring an input video signal for determining a desired overall gain value;

determining an unfiltered fine gain control value G_F using a first-order filter coefficient of unity and a first coarse gain control value $G_C[n-1]$;

monitoring the unfiltered fine gain control value G_F for underflow and overflow outside of a desired range;

in the event no underflow or overflow occurs, using the first coarse gain control value $G_C[n-1]$ as a second coarse gain control value $G_C[n]$, and a filter coefficient of less than one to determine a second fine gain control value $G_F[n]$;

in the event underflow or overflow occurs, using the unfiltered fine gain control value G_F and the first coarse gain control value $G_C[n-1]$ to determine a second coarse gain control value $G_C[n]$, then using the second coarse gain control value $G_C[n]$, determining a second fine gain control value $G_F[n]$;

applying the second coarse gain control value $G_C[n]$ and the second fine gain control value $G_F[n]$ to the input video signal to produce an output video signal within a pre-selected output amplitude range.

Claim 11 (original): The method according to claim 10 further comprising the step of reiterating all steps at intervals greater than once per video signal line.

Claim 12 (original): The method according to claim 10 further comprising the step of reiterating all steps once per video signal frame.

Claim 13 (original): The method according to claim 10 further comprising the step of reiterating all steps at intervals greater than once per video signal frame.

Claim 14 (original): The method for automatic gain control in a video signal processing system according to claim 10 wherein the step of determining an unfiltered fine gain control value G_F further comprises steps of:

using a first-order filter coefficient value $\boldsymbol{\beta}$ of unity, determining an unfiltered fine gain control value G_F according to the relationship,

$G_F = G_F[n-1] + \boldsymbol{\beta} * (a/b + G_F[n-1]) * [N_{NOM} / (N_{BP} - N_{ST}) - 1]$ (Equation 4)

wherein N_{BP} is the mean back-porch level and N_{ST} is the mean sync-tip level for the current video frame;

wherein N_{NOM} is the desired sync height;

wherein *a* is the y-intercept and *b* is the slope of the linear fine gain control equation;

for the condition $G_F < G_{MIN}$, selecting a new coarse gain control value $G_C[n]$, such that a new fine gain control value $G_F[n]$ is maintained between G_{MIN} and G_{MAX};

for the condition $G_F > G_{MAX}$ selecting a new coarse gain control value N_{CG}, such that a new fine gain control value $G_F[n]$ is maintained between G_{MIN} and G_{MAX};

wherein G_{MIN} is a pre-selected minimum fine gain control value, and G_{MAX} is a pre-selected maximum fine gain control value.

Claim 15 (original): The method for automatic gain control in a video signal processing system according to claim 10 wherein the step of determining a second coarse gain control value $G_C[n]$ further comprises steps of:

using an unfiltered fine gain control value G_F, and using a first coarse gain control value $G_C[n-1]$, determining a second coarse gain control value $G_C[n]$ according to the relationship,

$G_C[n] = (a'/b' + G_C[n-1])* (a/b + G_F) * 0.5$
$*[(a/b + G_{MIN})^{-1} + (a/b + G_{MAX} + 1)^{-1}] - a'/b' + 0.5$ (Equation 5);

wherein G_{MIN} is a pre-selected minimum fine gain control value, and G_{MAX} is a pre-selected maximum fine gain control value; and

wherein *a'* is the y-intercept and *b'* is the slope of the linear coarse gain control equation, and *a* is the y-intercept and *b* is the slope of the linear fine gain control equation.

Claim 16 (original): The method according to claim 15 further comprising the steps of representing the first fine gain control value $G_F[n-1]$ and the second fine gain control value $G_F[n]$ as a 12-bit digital value and representing the first coarse gain control value $G_C[n-1]$ and the second coarse gain control value $G_C[n]$ as 4-bit digital values.

Claim 17 (original): The method for automatic gain control in a video signal processing system according to claim 10 further comprising the step of:

using a first coarse gain control value $G_C[n-1]$, and using a second coarse gain control value $G_C[n]$, modeling a fine gain control value $G_F[n]$ using the relationship,

$G_F[n] = -a/b + (a/b + G_F) * [(a'/b' + G_C[n-1]) / (a'/b' + G_C[n])]$ (Equation 7);

wherein *a'* is the y-intercept and *b'* is the slope of the linear coarse gain control equation, and *a* is the y-intercept and *b* is the slope of the linear fine gain control equation.

Claims 18-19 (cancelled)